The Impact of Physician Knowledge of laboratory Practices on Detection of *E. coli* O157:H7

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The current estimated annual incidence of *Escherichia coli* 0157:H7 (O157) infection is based on a single population-based study conducted in Seattle, WA. However, results of one year of active surveillance in the five FoodNet sites demonstrate that the incidence per 100,000 population of O157 varies widely by geographic region (GA, 0.6; CA, 1.1; CT, 2.3; OR, 2.6; MN, 5.5). This variability may be a factor of both agent prevalence in food sources and laboratory detection. To assess the impact of physician knowledge of laboratory practice on the reported incidence of O157, we evaluated the results of the FoodNet laboratory and physician surveys. Physicians were asked to name the primary laboratory where they send stool specimens for bacterial culture, and whether or not that laboratory always tested all stools for O157. Only physicians who submitted 100% of all stool specimens to a single laboratory or to multiple laboratories that had the same practice were included in the analysis. We compared physician answers about laboratory culture practices for O157 to the practices reported by the laboratory. We analyzed responses from 1,039 physicians and 168 laboratories. The percentage of physicians who knew if their laboratory tested all bacterial stool submissions for O157 varied by site: (GA, 28%; CA, 35%; CT, 37%; OR, 53%; MN, 57%). The incidence of O157 was higher in sites where physician knowledge of laboratory practice was greater ($p < 0.05$). Of those who reported their laboratory always tested all stool for O157, 82% of physicians in CA, 74% in GA, 60% in CT, 31% in OR, and 20% in MN were mistaken. When physicians assumed their laboratory always tested for O157, they often failed to order a culture for O157 on their last patient with bloody diarrhea. Of those who assumed that their laboratory always tested stool for 0157,83% of physicians in CA, 82% in GA, 54% in CT, 28% in OR and 17% in MN did not request a culture for O157, because they incorrectly assumed the laboratory always tested for it. As a result of physician misunderstanding of laboratory practice, the percentage of physicians in each site who did not culture their last patient with bloody diarrhea for 0157 was: GA, 32%; CT, 25%; CA, 24%; OR, 13%; MN, 8% ($p<0.05$). Physician knowledge of laboratory practice appears to contribute to the incidence of 0157. When reporting negative bacterial stool culture results to physicians, laboratories should identify which organisms were tested for to increase physician awareness and improve detection of *E. coli* O157:H7.

Table 2. Physicians included in the Final Analysis, by Site.

	California	Connecticut	Georgia	Minnesota	Oregon	Total
Physicians who saw patient with diarrhea	207	296	274	491	515	1783
Physicians sho didn't know or identify their lab's name	14	31	39	50	55	189(11)
Physicians who sent stools to multiple labs with different practices	48	113	80	67	94	400(22)
Physicians who sent stool to unidentified lab	30	6	10	86	21	153(9)
Physicians included(%)	115(56)	146(49)	145(53)	288(59)	345(67)	1039(58)

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